

CLAIMS

What is claimed is:

1. A method of increasing computer system bandwidth for computer system having two or more memory complexes, each complex having a cache pool, comprising:
5 using exclusive OR (XOR) operations to generate a parity block from data from data regions,
wherein no XOR operation is split between two or more cache pools.
2. The method of Claim 1, further comprising a disk array controller determining the size of cache pool memory needed for storing the data from the data regions.
- 10 3. The method of Claim 2, wherein the minimum size for storing the data is a disk sector size.
4. The method of Claim 2, wherein the maximum size for storing the data is an entire volume.
5. The method of Claim 1, wherein a disk array controller assigns the data regions to
15 the single cache pool.
6. The method of Claim 1, wherein the XOR operations on the data from the data regions to generate parity information.
7. The method of Claim 6, wherein the parity information is stored in the same cache pool as the data regions.
- 20 8. The method of Claim 1, wherein the data from the data regions is spread equally throughout the separate memory complexes.
9. The method of Claim 1, wherein the method is used with a redundant array of independent disk drives.
10. The method of Claim 2, wherein the size of the data from one of the separate
25 memory complexes is a segment.
11. The method of Claim 2, wherein the size of the data is a stripe.
12. The method of Claim 11, wherein the stripe includes parity information generated from the data of the data regions.
13. The method of Claim 1, wherein the exclusive or operation is performed through

hardware.

14. The method of Claim 1, further comprising first receiving the data from the data regions from outside the memory complexes.

15. The method of Claim 1, wherein scaling the number of memory complexes does
5 not affect the disk drive number.

16. The method of Claim 1, wherein the data from the data regions is assigned to a single cache pool.

17. The method of Claim 1, wherein the data comes from a host computer.

18. The method of Claim 1, further comprising assigning logical block addresses to a
10 specific cache pool.

19. The method of Claim 18, wherein, if the data from the data regions spans two logical block address ranges, two XOR operations are performed.

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20. A computer memory system, comprising:
two or more separate memory complexes; and
a memory controller, wherein the memory controller assigns data regions from a
memory complex only to a single and corresponding cache memory pool.
- 5 21. The computer memory system of Claim 20, further including a redundant array of
independent disk drives.
22. The computer memory system of Claim 21, wherein the memory controller
assigns the data regions via firmware.
23. The computer memory system of Claim 21, wherein the memory controller
10 assigns the data regions via software computer code.
24. The computer memory system of Claim 21, wherein the memory controller
assigns the data regions via hardware.
25. The computer memory system of Claim 21, wherein the data regions associated
with a single one of the memory complexes are exclusive ored via hardware to form a
15 parity block.
26. The computer memory system of Claim 20, wherein each of the two or more
separate memory complexes has its own associated memory controller.
27. The computer memory system of Claim 26, wherein each of the two or more
memory complexes and its own associated memory controller are part of a disk array
20 controller.
28. The computer memory system of Claim 20, further comprising mass storage
devices.
29. The computer memory system of Claim 28, wherein the mass storage devices
include disk drives.
- 25 30. The computer memory system of Claim 29, wherein the disk drives are arranged
as a redundant array of independent disk drives.